

# Cyanide poisoning and African elephant mortality in Hwange National Park, Zimbabwe: a preliminary assessment

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## Introduction

Hwange National Park (NP) is the largest national park in Zimbabwe. Covering 14,651 km<sup>2</sup>, it is located between 18°30'–19°50'S and 25°45'–27°30'E. Hwange NP is characterized by semi-arid conditions with an annual mean rainfall of about 634 mm (Hubbard and Haynes 2012). It has more than 100 mammal species, 19 of which are large herbivores and 8, large carnivores, and more than 400 bird species (ZPWMA 2012). Hwange NP is largely dominated and characterized by deep Kalahari sands (Rogers 1993) and has no perennial river system. Water-dependent animals rely on pumped water boreholes; the first boreholes were drilled in the 1930s (Mukwashi et al. 2012) and now over 80 boreholes are known to exist in the park.

During 2013, media reports of elephant (*Loxodonta africana*) deaths in Hwange NP due to chemical poisoning sent shock waves across the conservation field. Media framing of the incident portrayed different figures of elephant deaths and manner of poisoning. For example, the headline of *The Telegraph* of 20 October 2013 read 'Poachers kill 300 Zimbabwe elephants with cyanide', the *International Business Times* of 21 October 2013 also reported more than 300 elephant deaths, while the *Zimbabwe Standard* of 20 October 2013 reported over 500 elephant deaths. Still others reported different figures.

This article reports the first attempt at a rigorous and systematic study of chemical poisoning of wildlife in Hwange NP prompted by the 2013 cyanide poisoning of elephant and other animal species. The objectives of the study were to: 1) identify the species and quantify the animals affected by cyanide poisoning in Hwange NP and its environs, and 2) assess the opinions of

people directly affected by this incident, both socially and ecologically. The assessment conducted in October 2013 included two field visits to the main sites of elephant poisoning, personal interviews with five Parks officials based at Hwange NP and three Forest Commission representatives based at Ngamo Forest Field Station, and a review of aerial survey reports.

## Effects of cyanide poisoning on elephants and other animal species

Extensive aerial survey reports and personal observation put the total elephant deaths through poisoning at 105 inside the park and 30 outside. However, our figures are inconsistent with those from Zimbabwe Parks and Wildlife Management Authority (ZPWMA), which stand at 115. This difference may be explained by a disparity in identifying the cause of death of some carcasses found. A total of 40 cyanide-contaminated sites were recorded (E Makuwe, pers. comm., 11 October 2013); their distribution is shown in Figure 1.

Elephant carcasses were discovered either at or close to salt pans. In Josivanini we observed that some elephant carcasses were located between a minimum distance of less than 5 m and a mean maximum distance of 1 km from a licked poisoned salt pan, suggesting that some of the affected elephants quickly succumbed to poisoning.

Other species were also affected (Table 1). The number of predators affected is low, but the actual extent of the impact to other wildlife was not ascertained. Ivory was removed from many of the adult elephant carcasses seen, indicating a sign of organized poaching. For example, of the reported 87 elephant carcasses identified as at 26 September 2013,

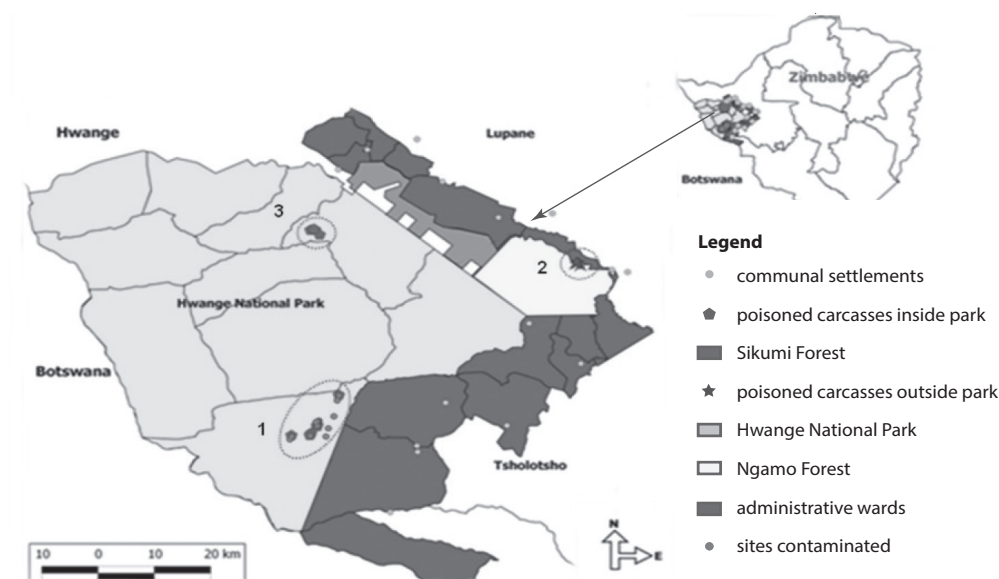


Figure 1. Distribution of cyanide poisoning sites in and outside Hwange NP. (Three different localities were poisoned—two inside and one outside the park, i.e. Josivanini [1] and Ngamo Forest area [2]) and Guvalala pan [3].)

authorities recovered only 51 tusks leaving 123 tusks in the hands of poachers (ZPWMA 2013). The reasons for mass poaching of elephants using cyanide were varied and included issues of poverty, disgruntlement over skewed distribution of Communal Area Management Programme for Indigenous Resources (CAMPFIRE) proceeds, land contests, external influence, particularly from markets, retaliation for crop raiding and outright subversion of the law. Similar issues have been linked to poaching incidents in other areas (Gandiwa et al.

2013; Muboko and Murindagomo 2014). Despite this unfortunate incident, the impact on elephant population is non-significant considering that Hwange NP already has an elephant problem: an elephant population of over 45,000 (Foggin 2003; Mukwashi et al. 2012) has exceeded the threshold of potential concern, as illustrated by unsustainable vegetation damage.

Interviewed officials had mixed perceptions on the effects of cyanide on natural ecological systems. Concerns focused on the persistence of cyanide in the

Table 1. Number and distribution of animal species killed by cyanide poisoning in three sites

Species	Josivanini	Ngamo Forest	Guvalala	Total
African elephant ( <i>Loxodonta africana</i> )	94	30	11	135
African buffalo ( <i>Syncerus caffer</i> )	2	–	–	2
Giraffe ( <i>Giraffa camelopardalis</i> )	1	–	–	1
Lion ( <i>Panthera leo</i> )	1	–	–	1
Spotted hyena ( <i>Crocuta crocuta</i> )	1	–	–	1
African wild dog ( <i>Lycaon pictus</i> )	2	–	–	2
Greater kudu ( <i>Tragelaphus strepsiceros</i> )	1	–	–	1
White-backed vulture ( <i>Gyps africanus</i> )*	–	–	–	–
Hooded vulture ( <i>Necrosyrtes monachus</i> )	–	–	3	3
Lappet-faced vulture ( <i>Torgos tracheliotos</i> ) *	–	–	–	–

Source: Interviews and field observations (2013)

– numbers could not be ascertained due to the state of carcass decomposition

\* no carcasses observed

environment, its reaction after exposure to open, hot and dry conditions, and its effect on water systems either through surface contamination or underground seepage.

## Recommendations

It is important to re-enforce law-enforcement efforts, review workforce levels and conduct further detailed studies on the impact of chemical use on wildlife ecology. While long-term socio-ecological studies are critical, policymakers and researchers can also focus on the following research themes to underpin future research: mammal studies (especially on distribution, movement patterns), water supply, saltpans and ornithological studies, parks–community relations, human–wildlife conflict and effectiveness of community-based conservation initiatives.

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